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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,825	06/26/2006	Masakatsu Urairi	UNIU79.070APC	3951

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EXAMINER

EVANS, GEOFFREY S

ART UNIT	PAPER NUMBER
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3742

NOTIFICATION DATE	DELIVERY MODE
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01/07/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/584,825	URAIRI ET AL.	
	Examiner	Art Unit	
	Geoffrey S. Evans	3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-17, 19-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20-24 is/are allowed.
- 6) ☒ Claim(s) 9-17, 19 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20080721, 20081015, 20081030</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The indicated allowability of various claims in the previous office actions is withdrawn in view of the newly discovered prior art (Tobita et al. in U.S. Patent Application Publication No. 2004/0048054). The delay in citation of this reference is regretted.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 9-11,13-19,25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akazawa in Japan Patent No. 2002-338,911 in view of Hammann et al. in U.S. Patent No. 6,811,88 , Tobita et al. in U.S. Patent Application Publication No. 2004/0048054. Akazawa discloses a protective sheet with an associated adhesive layer for processing a semiconductor wafer with the protective sheet made of an

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aromatic polymer, i.e. polyimide (see paragraph 14) on top of the wafer (substrate).

Hammann et al. teaches that a layer of polyimide (see column 2, line 58) can be used with an excimer laser (which is inherently ultraviolet) or an Nd:YAG laser (see column 3, lines 37-40). Tobita et al. discloses in a circuit board (see paragraph 59) using a molded polymer with 2 to 5 parts per weight of filler (see paragraph 36) and a density of preferably 1.1 to 1.5 g/cm³ (see paragraph 43) to have high thermal conductivity and excellent electrical insulation properties. It would have been obvious to adapt Akazawa et al. in view of Hammann et al. to provide this to use the polymer sheet with the filler materials of Tobita et al. to provide this to permit the laser beam to more easily machine a hole in the polymer sheet so that the laser beam can subsequently machine the workpiece (base). Using a protective sheet with a tensile strength of 100 MPa or more would be obvious since it would match the tensile strength of known polymer circuit boards.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akazawa in view of Hammann et al., and Tobita et al. as applied to claim 10 above, and further in view of Chang et al. in U.S. Patent No. 6,864,459 or De Steur et al. in U.S. Patent No. 6,610,960. Chang et al. teaches using a wavelength of 355 nm to laser drill a hole (see column 7, line 2). Alternatively De Steur et al. teaches using a laser beam with a wavelength of 355 nm (see column 6, line 19) to laser drill a hole. It would have been obvious to adapt Akazawa et al. in view of Hammann et al., Tobita et al. and either Chang et al. or De Steur et al. to provide this to laser drill a hole with this known common wavelength.

6. Claims 20-24 are allowed.
7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kawasaki et al. in Japan Patent No. 2002-134,921 discloses a printed wiring board with 10 to 50 % by weight of filler made of inorganic particles (see paragraphs 24 and 25). Taniguchi in Japan Patent No. 2002-105,221 discloses a film useful in printed circuit boards made of filler 5-50 parts per weight.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey S. Evans whose telephone number is (571)-272-1174. The examiner can normally be reached on Mon-Fri 7:30AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on (571)-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Geoffrey S Evans/
Primary Examiner, Art Unit 3742